

# Synthesis of a New Cyclic Amide Spin Trap: Biological Applications

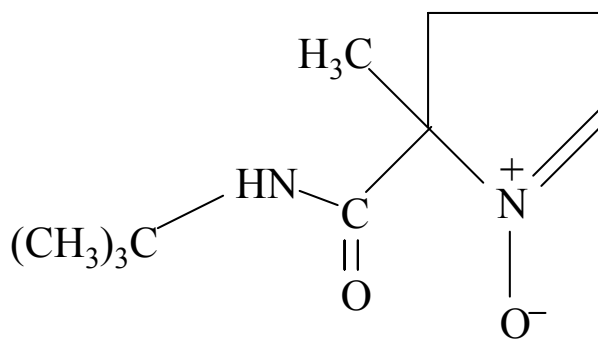
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Recently, several new analogs of 5, 5 -dimethyl -1 -pyrroline N-oxide (DMPO) that form more persistent superoxide adducts have been synthesized. These analogs include DEPMPO, EMPO and BMPO [1-3]. In all of these traps, one of the methyl groups at the 5-position in DMPO had been replaced by an electron-withdrawing ester group. Although these traps generate a more persistent superoxide adduct, it is likely that these traps could undergo hydrolysis of the ester group in cells. Thus, we surmised that it is worthwhile to replace the ester group with an amide group that still has an electron-withdrawing group (e.g., an amide group).

In this study, we report the synthesis of a new cyclic amide spin trap, 5-t-butylaminocarbonyl 5-methyl 1-pyrroline N-oxide (BAMPO). The BAMPO-OOH and BAMPO-OH adducts were generated using a xanthine/xanthine oxidase system as reported previously [3]. The half-life of BAMPO-OOH adduct was similar to that of BMPO-OOH adduct. The ESR spectral parameters of BAMPO-OOH are significantly different from those of BMPO-OOH.

We conclude that BAMPO may be more suitable for trapping oxy radicals under conditions favoring hydrolysis of esters.



BAMPO

5-t-butylaminocarbonyl 5-methyl 1-pyrroline N-oxide

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- [3]. Hongtao Zhao, Joy Joseph, Hao Zhang, Hakim Karoui, and B. Kalyanaraman, *FreeRadic. Biol. Med.* 31, 599-606, 2001